

Patent Abstracts of Japan

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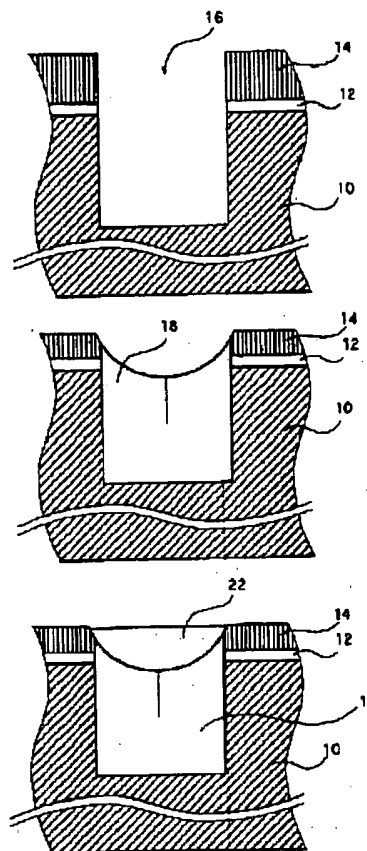
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APPLICANT : KAWASAKI STEEL CORP;

INVENTOR : FUJISHIMA MASAOKI;

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TITLE : SEMICONDUCTOR DEVICE AND
 MANUFACTURING METHOD
 THEREOF



ABSTRACT : PROBLEM TO BE SOLVED: To prevent a lowering of a yield due to corrosion of a seam portion which occurs in an oxide film buried into a trench, by leaving a surface of a first film trench so that the surface is dented lower than a surface of a semiconductor substrate and planarizing the surface of the semiconductor substrate so that a second film is left in the trench.

SOLUTION: A shallow trench 16 is formed in a silicon substrate 10. After oxidizing a side wall of the trench 16 at high temperature, a first chemical vapor deposition(CVD) film 18 is formed and the trench 16 is filled back. A first planarization is performed by chemical mechanical polishing method to dent the upper surface of the first CVD film 18 in the shape of a sphere. Additionally, a second CVD film 22 is deposited. In this deposition, the second CVD film need be dented deeper than the first CVD film 19 formed by the first planarization. Finally, a second planarization is performed. Perfect planarization can be achieved without a recess in the upper portion of the trench by using a hard pad with relative low pressure and high rotational frequency in the second planarization.

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